



Bellevue 120th Avenue NE Corridor Project

PRELIMINARY DRAFT Transportation Technical Report

prepared for
City of Bellevue

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Acronyms and Abbreviations

ADT	Average Daily Traffic
LOS	Level-of-Service

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The findings of the traffic analysis show that congestion levels and peak hour delays are currently moderate and generally manageable based on standard-practice thresholds. Analysis of the existing (2010) conditions yielded results for the five study area intersections that average vehicle delays are at level-of-service (LOS) D or better.

Future traffic levels in the area are expected to increase significantly, especially by the 2030 horizon. Such increases would occur because of zoning changes and proposed land use intensification adjacent to the 120th Avenue NE corridor. For the 2015 horizon, less pronounced increases in land use intensity and traffic demand would occur due to the “ramp up” needed to implement new development in the area. As a result, congestion levels for both the 2015 No Action and 2015 Build conditions would operate at LOS D or better with the exception of the 120th Avenue NE at NE 12th Street intersection that would operate at LOS E.

With the full build-out of the Bel-Red Subarea roadway improvements, Interstate-405 (I-405) and State Route 520 (SR 520) enhancements, completion of the planned East Link light rail alignment along NE 15th/16th Street, and full implementation of the land use vision for the subarea, large increases in traffic demand on 120th Avenue NE and associated congestion levels would likely occur. Under No Action conditions (i.e., none of the improvements along 120th Avenue NE, but all other roadway projects completed) four of the five study intersections would operate at LOS E or LOS F. However, with the 120th Avenue NE improvements in place, reductions in peak hour congestion would be realized with delays of LOS E or better for all intersections evaluated.

In terms of mitigation, the following are potential measures that could complement the design elements for the project:

- 120th Avenue NE at Northup Way – Northbound Left Turn Lane: Due to the long-range traffic projections for the northbound left-turn movement from 120th Avenue NE onto Northup Way, a second left-turn lane should be considered to maximize capacity for this movement. The additional capacity afforded by the second northbound left-turn lane could translate into greater signal green time for competing movements on Northup Way.
- 120th Avenue NE at NE 15th/16th Street – Southbound Right Turn Lane: To enhance signal timing efficiency at the intersection of 120th Avenue NE at NE 15th/16th Street, a southbound right turn could be considered as an added design element to reduce southbound queuing activity and allow for overlapping of signal phasing with the eastbound left-turn movement.

1.1 Purpose of This Report

This *Transportation Technical Report* is being prepared as part of the Bellevue 120th Avenue NE Corridor Project for the City of Bellevue, which proposes to widen 120th Avenue NE from 8th Street in the south to Northup Way in the north. The purpose of this report is summarize the potential future impacts and benefits of the project as they relate to general-purpose traffic flow and circulation during the critical weekday PM peak-hour periods.

1.1.1 Permits Needed

There would be no permits required with respect to the transportation discussion in this technical report.

2.0 Proposed Project

2.1 Project Overview

The 120th Avenue NE Corridor Project (Segments 2 and 3) extends from just south of NE 8th Street to Northrup Way. The City of Bellevue (City) proposes to widen the existing corridor from a two-lane roadway to a five-lane roadway. Figure 2-1 shows the project study area.



Figure 2-1. Project Study Area

The elements of the project include the following:

- Widen roadway to five travel lanes (two travel lanes in each direction and a center turn lane)
- Realign the roadway south of Bel-Red Road to improve intersection operations at the NE 8th Street intersection
- Install continuous sidewalks and bicycle lanes on both sides of the street designed to City arterial street standards
- Include planting strips on both sides of the roadway, and other green spaces where possible
- Install storm drainage and water quality facilities that use natural drainage practices
- Include provisions to connect with and minimize impacts to open spaces
- Connect with and minimize adverse effects to open-space areas and wetlands
- Accommodate new intersections with the planned NE 15th/16th Street Corridor and Sound Transit's East Link light rail line

Other project elements include illumination, landscaping, structural walls, traffic signals, and new and relocated utilities (Error! Reference source not found.).

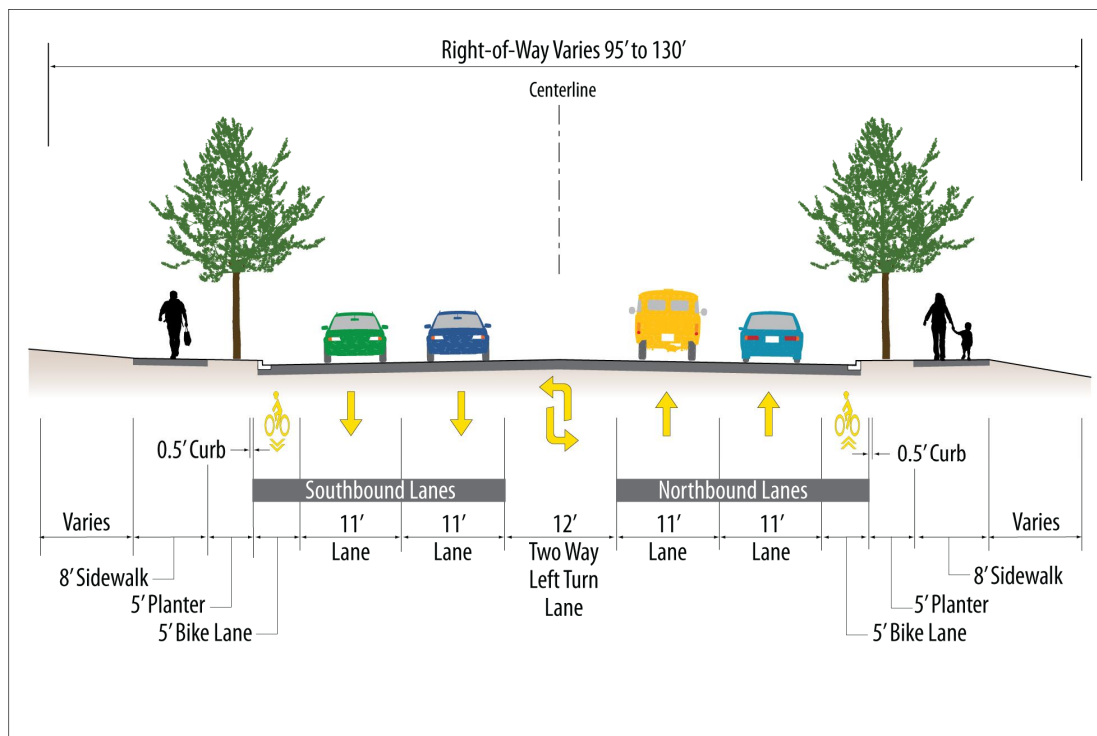


Figure 2-2. Typical Cross-Section

1 The term “right-of-way”, as used in this report, includes both right-of-way owned
2 by the City and permanent easement, i.e., the complete footprint of the project.

3 Project construction would occur over a two-year period. It is assumed that the
4 improvements from NE 8th Street to NE 12th Street would be completed and
5 opened to traffic prior to those from NE 12th Street to Northup Way. This
6 construction sequencing would minimize traffic impacts.

7 A minimum of one lane would be open for traffic in each direction along 120th
8 Avenue NE as the project is constructed. The construction would occur on one-
9 half of the roadway at a time. Only Bel-Red Road would be closed for any length
10 of time (9 to 12 months) during the realignment of 120th Avenue NE near NE 8th
11 Street.

12 Generally, the work is anticipated to occur in the following sequences:

- 13 • Contractor Mobilization—Months 1 and 2
- 14 • NE 8th Street to NE 12th Street Improvements—Months 3–12:
 - 15 □ Traffic control and temporary erosion control
 - 16 □ Utility relocation/installation
 - 17 □ Roadway Side 1—Retaining walls, grading, paving, signals, and
 - 18 illumination
 - 19 □ Roadway Side 2—Retaining walls, grading, paving, signals, and
 - 20 illumination
- 21 • NE 12th Street to Northup Way Improvements—Months 13-24
 - 22 □ Traffic control and temporary erosion control
 - 23 □ Utility relocation/installation
 - 24 □ Roadway Side 1—Retaining walls, grading, paving, signals, and
 - 25 illumination
 - 26 □ Roadway Side 2—Retaining walls, grading, paving, signals, and
 - 27 illumination

28 The *Project Description Technical Report* contains a detailed description of the
29 project.

3.1 Methods Used in this Analysis

The following methods were applied to the effects analysis contained in this report. Reasons were provided for methods that varied from Washington Department of Transportation standards.

The various types of data compiled and processed are summarized. The overall study approach is first discussed, followed by a description of the traffic forecasting process and operational analysis.

3.1.1 Study Approach

This assessment of the 120th Avenue NE arterial followed a conventional planning analysis approach that included basic data compilation and reconnaissance, investigation of existing transportation conditions that reflect a number of modes, forecasts of future trip generation and circulation patterns, and analysis of future operational impacts and benefits. A general flow chart illustrating the key tasks targeted for this traffic analysis effort is provided in Figure 3-1.

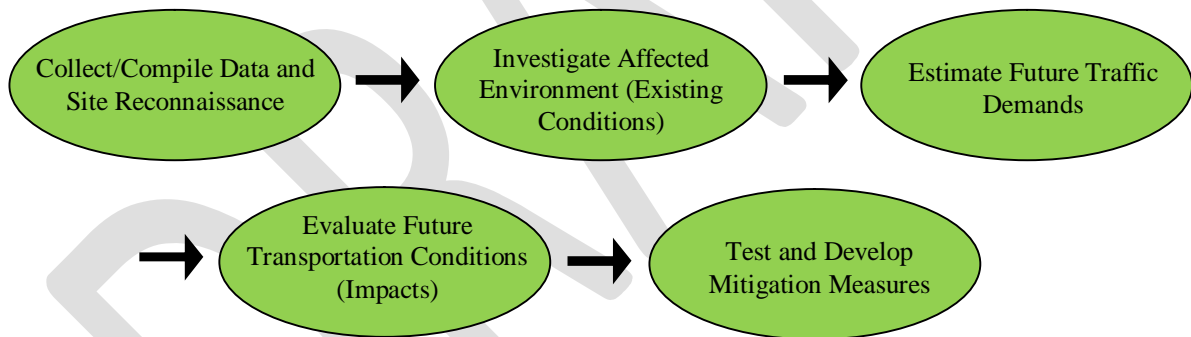


Figure 3-1. Key Study Tasks

Because of the compressed timeline to complete the 120th Avenue NE design effort, travel demand forecasting data were limited to model-based outputs that were readily available at the time of project inception. Existing traffic data were compiled from on-going studies for the Wilburton Connections Subarea Program and were confirmed through field visits and visual documentation. The City provided the remaining data in terms of truck volumes and signal timing information. Refinements were made to this data to ensure cross-consistency between study intersections and/or to reflect field-verified data.

After reviewing and refining the available background data, existing traffic conditions in terms of average vehicle delays and LOS were examined by using a simulation analysis tool. The five existing intersections, and one new, not yet constructed intersection targeted for this evaluation were:

- 120th Avenue NE at Northup Way
- 120th Avenue NE at NE 15th/16th Street (new intersection)
- 120th Avenue NE at NE 12th Street
- 120th Avenue NE at Bel-Red Road
- 120th Avenue NE at NE 8th Street
- NE 8th Street at Bel-Red Road

Future opening-year (2015) PM peak-hour traffic forecasts for these key intersections were then developed using the City's travel demand model-based growth rates and intersection volume refinements. Long-range (2030) PM peak-hour forecasts were similarly developed using model-based data. Using the refined forecast volumes and distribution patterns for the 2015 and 2030 future year scenarios, future traffic conditions were investigated through further operational analysis.

3.1.2 Data Compilation and Site Reconnaissance

The majority of input data for the technical analysis was taken from previous or on-going work related to the NE 4th Street Extension Project, 120th Avenue NE Segment 1 Project, and the Wilburton Connections Traffic Forecasting effort. These data included intersection traffic counts, I-405 ramp volumes, truck volumes, and lane geometry data. As part of the field investigation process, digital photos were taken for data verification. Signal timing data for the study intersections were taken from traffic analysis files previously established for the NE 4th Street Extension Project and the City's signal operations staff. Transit routes and service levels were extracted from the King County Metro and Sound Transit websites.

3.1.3 Traffic Forecasts

Estimates of future traffic demand were developed using volume forecasts prepared by the City specifically for the Wilburton Connections Subarea program. Travel demand model data and post-processed PM peak-hour intersection volumes that reflected the 2015 No Action and 2030 Build conditions were available from previous modeling work. For these two scenarios, only minor redistribution of traffic was required to reflect a design modification of the intersection configuration for 120th Avenue NE at Bel-Red Road. However, for the 2015 Build and 2030 No Action scenarios, volume estimates were derived from established model runs to "book-end" the traffic growth potential at each intersection. More extensive manual redistribution was required for these scenarios since none of the model runs directly represented the network definitions assumed for the 2015 Build and 2030 No Action cases.

3.1.4 Operational Analysis

Analysis of roadway and intersection operational performance for the existing, No Action, and Build evaluation scenarios was performed using the Synchro analysis package. Key inputs into Synchro included traffic volume data, signal timing data, pedestrian and bicycle volumes, bus and heavy vehicle traffic levels, and a variety of other geometry-related data items. Where no explicit input data were available (e.g., saturation flow rate information), default values within the analysis package were assumed. Performance measures extracted from the analysis results included average vehicle delays and LOS.

4.0

Existing Conditions

4.1 Existing Street Network

The project extends from just south of NE 8th Street to Northup Way. This segment of 120th Avenue NE provides one lane in each direction and is classified as a collector arterial by the City. Segment 1 of the 120th Avenue NE Corridor Project begins at the intersection of SE 1st Street and 116th Avenue SE and extends to the southern limit of Segment 2, just south of NE 8th Street. Currently there is no continuous segment of 120th Avenue NE across NE 8th Street.

Key cross streets and intersections along the corridor are described below. Figure 4-1 illustrates the existing lane configurations at key intersections along the project corridor.

4.1.1 120th Avenue NE at Northup Way

The intersection of 120th Avenue NE at Northup Way is a three-leg signalized configuration. Northup Way is classified as a minor arterial by the City. For the eastbound leg, one through lane is provided along with an exclusive right-turn lane. Two through lanes and one left-turn lane are provided for westbound traffic. Separate left-turn and right-turn lanes are provided for northbound traffic onto Northup Way.

4.1.2 120th Avenue NE at NE 12th Street

The intersection of 120th Avenue NE at NE 12th Street is signalized. NE 12th Street is classified as a major arterial by the City and provides two travel lanes in each direction (eastbound and westbound). Exclusive left-turn lanes are provided for all approach legs, and a northbound right-turn lane currently exists.

4.1.3 120th Avenue NE at Bel-Red Road

The intersection of 120th Avenue NE at Bel-Red Road is currently a three-legged unsignalized intersection, with the north leg being stop-controlled and the east and west legs operating freely. A through lane and left-turn lane are provided in the eastbound direction. A single lane is provided for all westbound and southbound movements.

4.1.4 Bel-Red Road at NE 8th Street

The intersection of Bel-Red Road at NE 8th Street is a three-legged signalized intersection. NE 8th Street is designated as a major arterial by the City and serves as a critical spine linking neighborhoods on the east and west sides of I-405. The geometry is slightly skewed, with the southbound leg connecting to the intersection at an angle. Three through lanes are provided in the eastbound direction, with one of the through lanes transitioning into a right-turn-only lane at the nearby intersection of 120th Avenue NE at NE 8th Street. Eastbound traffic operates freely at the intersection of Bel-Red Road and NE 8th Street. There is

1 also an eastbound left-turn/U-turn lane. In the westbound direction, two
2 westbound lanes, including a shared through/right-turn lane are currently
3 provided. Southbound traffic must turn right and head westbound on NE 8th
4 Street; this movement is provided by a free right-turn.

5 The intersection of Bel-Red Road and NE 8th Street is approximately 200 feet
6 west of the 120th Avenue NE at NE 8th Street intersection. The signal timing of
7 these two intersections is closely coordinated due to the skewed geometry of this
8 intersection combined with the close proximity to NE 8th Street at 120th Avenue
9 NE.

10 4.1.5 120th Avenue NE at NE 8th Street

11 The intersection of 120th Avenue NE at NE 8th Street is currently a three-legged
12 signalized intersection that operates in tandem with the adjacent offset
13 intersection to the west. 120th Avenue NE is the northbound leg of the
14 intersection, and two left-turn lanes are provided with an exclusive right-turn
15 lane. The eastbound leg has two through lanes and a right-turn lane while the
16 opposing westbound leg has two through lanes and a left-turn lane. Signal timing
17 and phasing at this location is coordinated on a single controller with the
18 adjacent signal to the west.

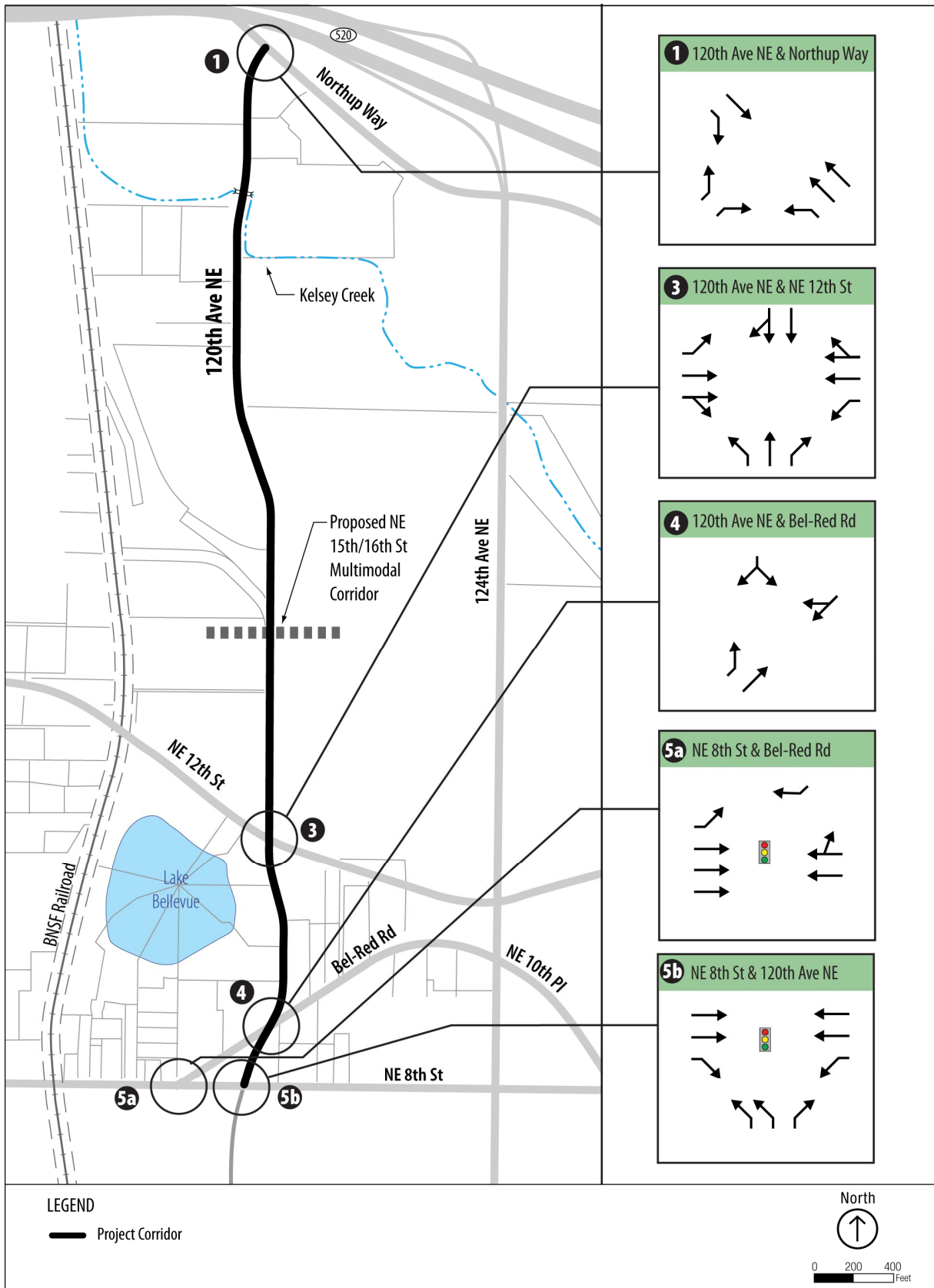


Figure 4-1. Existing Intersection Lane Configurations

4.2 Traffic Volumes

2010 PM peak-hour turning-movement traffic volumes for the study area were provided by the City. The volumes were developed as part of the Wilburton Connections traffic modeling effort. A summary of intersection volumes is shown in Figure 4-2. Also shown are average daily traffic (ADT) volumes along 120th Avenue NE.

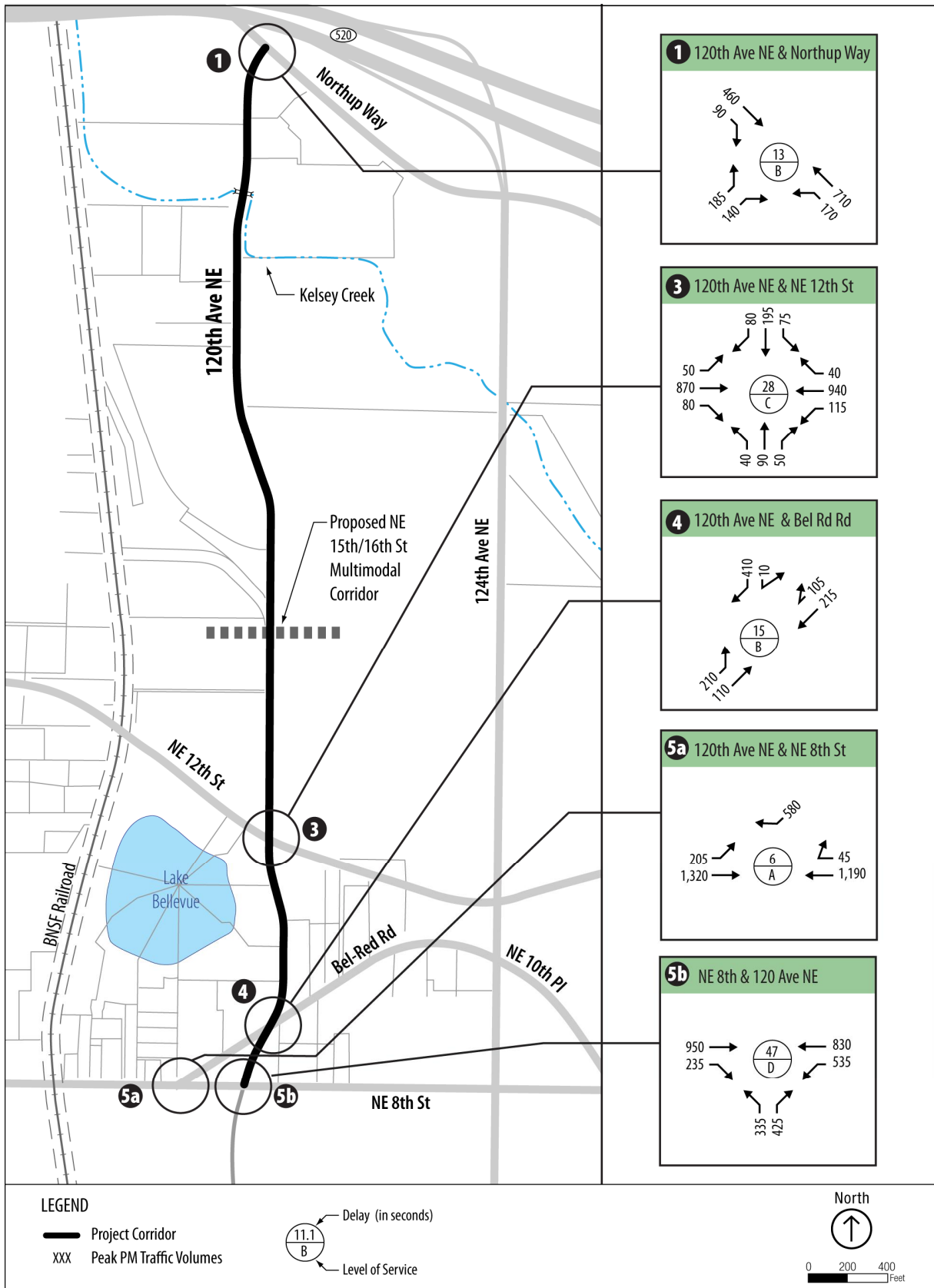


Figure 4-2. Existing (2010) PM Peak Hour and Link ADT Volumes

4.3 Intersection Level-of-Service

Operational analysis of the PM existing peak-hour conditions along the 120th Avenue NE corridor was performed using the Synchro analysis package. Synchro was used to determine LOS, which is a general measure of congestion for transportation facilities such as arterials. Table 4-1 provides standard LOS criteria and thresholds for signalized intersections, as provided in the Transportation Research Board's *2000 Highway Capacity Manual*. A summary of the intersection analysis results is provided in Table 4-2.

Table 4-1. Level-of-Service Criteria (Signalized Intersections)

LOS	Signalized Delay (seconds/veh)	Description
A	≤ 10	Low intersection delays, virtually unimpeded
B	> 10 and ≤ 20	Minor delays, less freedom to maneuver through the intersection
C	> 20 and ≤ 35	Moderate but stable delays, less freedom to maneuver through the intersection
D	> 35 and ≤ 55	Long delays and high density, but stable traffic operations
E	> 55 and ≤ 80	Operating conditions at or near capacity
F	> 80	Forced operation, breakdown conditions

Source: *2000 Highway Capacity Manual*, Transportation Research Board

Table 4-2. Existing (2010) PM Peak Hour Level-of-Service

Signalized Intersections	Control	LOS	Delay
120th Avenue NE at Northup Way	Signal	B	13 sec/veh
120th Avenue NE at NE 12th Street	Signal	C	28 sec/veh
120th Avenue NE at Bel-Red Road	Stop	B	15 sec/veh (SB) ¹
NE 8th Street at Bel-Red Road	Signal	A	6 sec/veh
120th Avenue NE at NE 8th Street	Signal	D	47 sec/veh

¹ This intersection is stop-controlled on the southbound leg.

As shown in Table 4-2, levels of congestion at key study intersections are generally low to moderate in terms of average vehicle delay and LOS. Overall, all intersections captured in the analysis currently operate at LOS D or better during the PM peak hour. However, some vehicle movements at critical intersections currently experience longer-than-average delays. Field observations of traffic conditions during commute periods confirmed these high congestion levels for specific movements, such as the eastbound through, westbound left turn, and northbound left turn movements from the intersection of 120th Avenue NE at NE 8th Street.

4.4 Transit Routes and Service

Metro Transit provides bus service in the project area. Currently there are no transit routes that operate on 120th Avenue NE within the study area segments.

1 However, several routes operate on streets that cross 120th Avenue NE,
2 particularly during peak commute hours. Bus routes 230, 253, 261, 272, and 885
3 travel along NE 8th Street; Route 233 travels on NE 12th Street; and Transit
4 routes 249, 256, and 889 travel on Northup Way. Headways for these routes
5 range from approximately 30 to 60 minutes during the PM peak commute period.
6 Additional information regarding bus transit service can be found on the King
7 County Metro website.

8 4.5 Freight Movements

9 Land use in the 120th Avenue NE corridor between Northup Way and Bel-Red
10 Road is comprised of light industrial and warehouse uses. Heavy vehicles (e.g.,
11 single-unit trucks, delivery vehicles, and semi-trailers) comprise approximately 3
12 to 7 percent of the overall traffic volumes during the PM peak hour. This range of
13 heavy vehicle activity is considered common for an industrial area. There are
14 several marked at-grade rail crossings along 120th Avenue NE between Northup
15 Way and NE 12th Street; these crossings are currently inactive.

16 4.6 Non-Motorized Traffic

17 Sidewalks are provided intermittently on 120th Avenue NE between Bel-Red
18 Road and Northup Way, with the majority of the roadway between NE 12th
19 Street and the 2000 block lacking sidewalks. Pedestrian volumes are low, with
20 less than 30 movements during the PM peak period. Bicycle volumes in the area
21 are low as well. Based on the City's *2009 Pedestrian-Bicycle Plan*, sidewalks and
22 bike lanes are planned along 120th Avenue NE.

5.0

Future Conditions

5.1 Roadway Network Changes

Planned or proposed changes for the study area arterials by the long-range 2030 horizon year would include a wide range of improvements, such as: arterial extensions, new street construction, general roadway widening, and Sound Transit's East Link light rail alignment. These projects are documented in various Wilburton Connections technical reports. Under the 2015 horizon, only a subset of the improvements to local arterials is assumed. Build conditions for both future horizon years would reflect full widening of 120th Avenue NE to Northrup Way to provide two lanes in each direction and a center turn lane. A summary of the assumed network changes for the 2015 and 2030 horizon years (for No Action and Build conditions) outside of the widening of 120th Avenue NE within Segments 2 and 3 is provided in Table 5-1.

Table 5-1. Planned or Programmed Improvements

Planned Project or Improvement	2015 No Action	2015 Build	2030 No Action	2030 Build
120th Ave NE Segment 1 (NE 3rd St to NE 8th St)	X	X	X	X
NE 4th Street Extension (to 120th Ave NE)	X	X	X	X
NE 5th Street Traffic Calming	X	X	X	X
NE 6th Street Extension (to 120th Ave NE)			X	X
NE 15th/16th Street Corridor			X	X
Sound Transit East Link light rail			X	X
I-405 NB Braided Ramps	X	X	X	X
SR 520 HOV Lanes (System Extension)	X	X	X	X

Outside of these projects and planned arterial improvements, the same basic network used for existing conditions was retained for the future No Action and Build scenarios. A new mid-segment, three-leg signalized intersection is created between NE 8th Street and NE 12th Street with reconfiguration of Bel-Red Road. The 120th Avenue NE lane configuration and cross-street revisions are graphically represented in Figure 5-1.

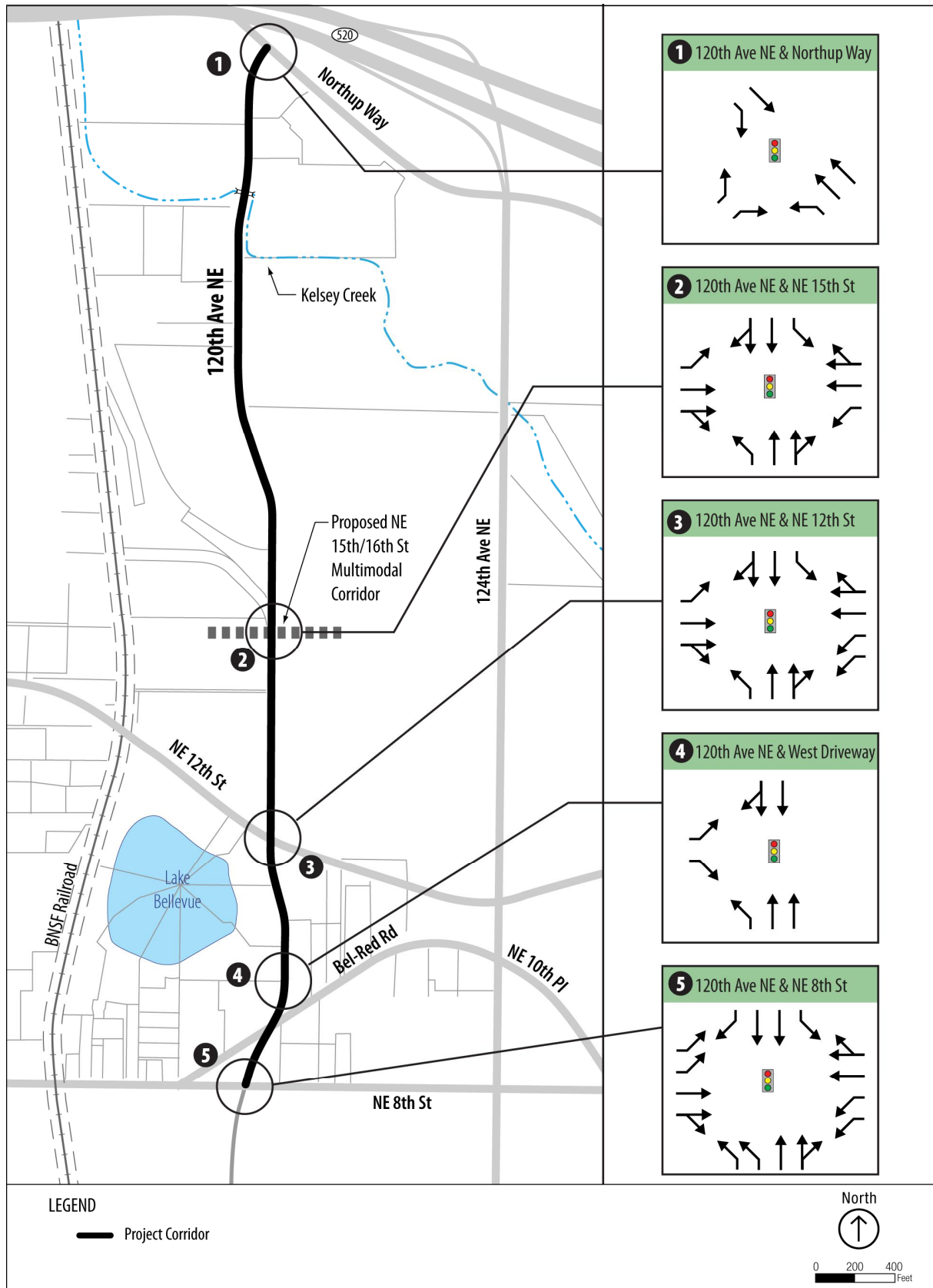


Figure 5-1. Proposed Intersection Lane Configurations

5.2 Traffic Volume Forecasts

As discussed in Chapter 3.0, traffic volume forecasts for the 2015 No Action and 2030 Build scenarios were based primarily on modeling data and post-processed PM peak-hour intersection volumes provided by the City. Model runs that accurately reflect these two network scenarios were available at the time of the traffic forecasting process for this project. However, for the 2015 Build and 2030 No Action scenarios, volume estimates were derived from available travel demand model data that reflect similar (but not complete) roadway networks. For these cases, data from available model runs were redistributed as needed and adapted to best represent peak-hour demands at various study intersections. Summaries of the 2015 and 2030 intersection volumes (No Action and Build conditions) for the five key intersections along with link ADT volumes are provided in Figure 5-2 and Figure 5-3.

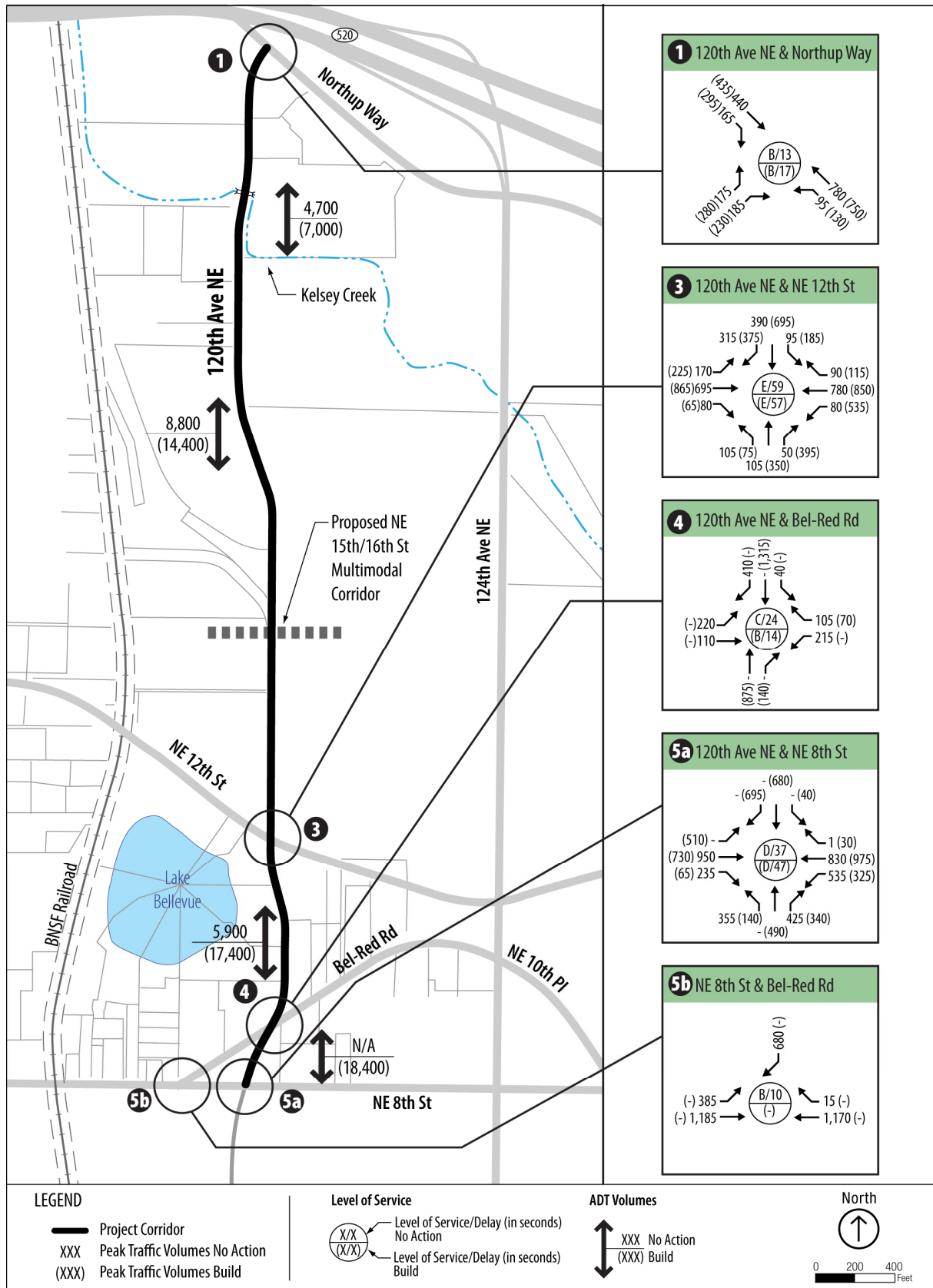


Figure 5-2. 2015 PM Peak Hour and Link ADT Volumes

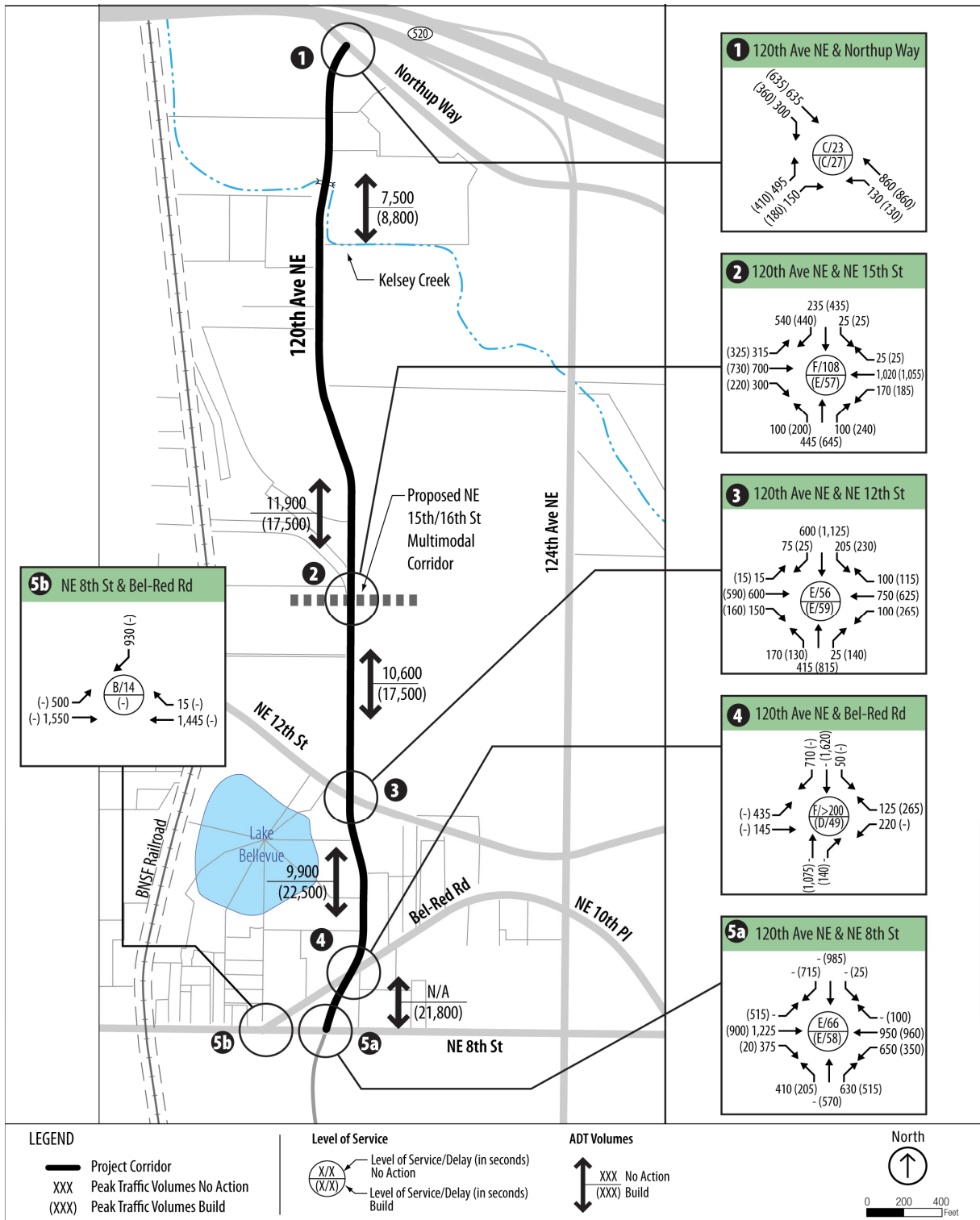


Figure 5-3. 2030 PM Peak Hour and Link ADT Volumes

5.3 Intersection Level-of-Service

Operational analysis of future 2015 and 2030 PM peak-hour conditions was performed using Synchro analysis software. As with the existing conditions assessment, the two primary performance measures used to compare No Action and Build conditions were average vehicle delays and LOS. The major roadway network differences between the No Action and Build scenarios included widening of 120th Avenue NE between NE 8th Street and Northup Way (i.e., the proposed 120th Avenue NE Corridor Project Segments 2 and 3) and cross-street channelization improvements at NE 8th Street and NE 12th Street. A new signalized intersection is created under the Build conditions between NE 8th Street and NE 12th Street to accommodate trips into and out of properties on the west side of 120th Avenue NE. The results of the 2015 and 2030 analyses for both the No Action and Build scenarios are summarized in Table 5-2 and Table 5-3.

Table 5-2. 2015 PM Peak Hour Level-of-Service

Intersection	2015 No Action			2015 Build		
	Control	LOS	Delay (seconds/veh)	Control	LOS	Delay (seconds/veh)
120th Avenue NE at Northup Way	Signal	B	13	Signal	B	17
120th Avenue NE at NE 12th Street	Signal	E	60	Signal	E	57
120th Avenue NE at West Driveway	---	---	---	Signal	A	6
120th Avenue NE at Bel-Red Road	Stop	C	24 (SB)	Stop	B	14 (WB)
120th Avenue NE at NE 8th Street	Signal	D	37	Signal	D	47

Table 5-3. 2030 PM Peak Hour Level-of-Service

Intersection	2030 No Action			2030 Build		
	Control	LOS	Delay (seconds/veh)	Control	LOS	Delay (seconds/veh)
120th Avenue NE at Northup Way	Signal	C	23	Signal	C	27
120th Avenue NE at NE 15th/16th Street	Signal	F	108	Signal	E	57
120th Avenue NE at NE 12th Street	Signal	E	56	Signal	E	59
120th Avenue NE at West Driveway	---	---	---	Signal	A	8
120th Avenue NE at Bel-Red Road	Stop	F	>200 (SB)	Stop	D	29 (WB)
120th Avenue NE at NE 8th Street	Signal	E	66	Signal	E	58

As shown, peak-hour delays are expected to be moderate-to-high for most intersections evaluated for each of the scenarios. Under 2015 No Action conditions, the 120th Avenue NE at NE 12th Street intersection would likely operate at LOS F with heavy congestion and long delays, primarily due to the lack of north-south capacity. Remaining intersections would operate at LOS D or

1 better under this scenario. By comparison, analysis results of the 2015 Build
2 scenario are similar or improved over 2015 No Action conditions. The greatest
3 reduction in delays and improvement in LOS between the 2015 No Action and
4 2015 Build conditions is shown at 120th Avenue NE at NE 12th Street where, on
5 average, delays could potentially decrease by over 50 percent. The slight
6 increases in delays for the intersections of 120th Avenue NE at Northup Way and
7 120th Avenue NE at NE 8th Street are due to either higher levels of demand for
8 2015 Build conditions and/or reconfiguration of the intersection.

9 A comparison of 2030 No Action and 2030 Build results show a similar trend
10 with similar delays for some locations and major reductions at others. Whereas
11 congestion levels and delays at two intersections under 2030 No Action
12 conditions reach well beyond LOS F minimum thresholds, all intersections under
13 the 2030 Build scenario operate at LOS E or better.

14 In terms of a vertical comparison between scenarios, the 2030 No Action analysis
15 results generally predict higher delays than the 2015 conditions, with the
16 exception of the 120th Avenue NE at NE 12th Street intersection. Due to the
17 expected construction and opening of the new NE 15th/16th Street Corridor
18 sometime between 2015 and 2030 (but not by 2015), traffic volumes would
19 likely shift away from NE 12th Street and partially redistribute to NE 15th/16th
20 Street. As a result, delays at 120th Avenue NE at NE 12th Street are slightly lower
21 for 2030 No Action conditions. A similar review of the analysis results for the
22 Build scenarios are consistent with general traffic growth trends in that delays
23 for 2030 Build conditions are higher than for 2015 Build conditions.

24 5.4 Transit and Freight Impacts

25 While no future bus routes are anticipated along 120th Avenue NE, the proposed
26 Sound Transit East Link light rail alignment along the NE 15th/16th Street
27 Corridor comprises a major change to the transit network in terms of
28 connections and potential ridership demand. The widening of 120th Avenue NE
29 would not affect East Link operations because the light rail alignment would
30 likely be located in a trench section under 120th Avenue NE adjacent to the new
31 NE 15th/16th Street arterial.

32 Freight movements along 120th Avenue NE would generally be reduced as the
33 redevelopment efforts unfold in the Bel-Red Subarea. However, heavy vehicle
34 access and circulation in the area would generally improve due to the additional
35 roadway capacity along 120th Avenue NE and potential efforts to enhance
36 accessibility to and from adjacent properties.

37 5.5 Non-Motorized Impacts

38 Pedestrian and bicyclist mobility and non-motorized safety would generally
39 improve with the proposed project improvements in place. As discussed in
40 Chapter 2.0, bike lanes and full sidewalks would be provided on both sides of the
41 roadway. Such delineation for pedestrians and bicyclists would reduce direct

- 1 conflicts with vehicular traffic and allow for better connections to regional non-
- 2 motorized facilities, transit hubs, and bus service on east-west streets crossing
- 3 120th Avenue NE.

Based on the operational analysis results and the assessment of transit services and non-motorized mobility few, if any, transportation-related improvements beyond those covered in the proposed 120th Avenue NE Corridor Project would be needed to ensure that the corridor functions as envisioned for the larger Wilburton and Bel-Red Subareas. However, minor channelization widening and restriping could be considered to provide some flexibility in the design process. A minimum of one lane would be open for traffic in each direction along 120th Avenue NE as the project is constructed. Only Bel-Red Road would be closed for any length of time during the realignment of 120th Avenue NE near NE 8th Street. Temporary traffic management plans would be prepared to ensure the implementation of detour signage and markings as appropriate during the various phases of construction.

Long-term design elements that could be considered to enhance traffic flow and circulation and further minimize corridor-specific congestion levels are described below.

6.1 120th Avenue NE at Northup Way

Due to the long-range traffic projections for the northbound left-turn movement from 120th Avenue NE onto Northup Way, a second left-turn lane should be considered to maximize capacity for this movement. The additional capacity afforded by the additional northbound left-turn lane could translate into greater signal green time for competing movements on Northup Way. Associated overhead signage could be incorporated to provide advanced indication of downstream channelization and access to nearby arterials. Cursory testing of an added 150-foot-long left-turn lane pocket resulted in average vehicle delays for the movement being reduced by up to 15 percent while overall intersection delays were reduced by up to 30 percent. There currently is right-of-way available for this additional lane so implementation could occur with minimal cost. In addition, it is likely that this left turn lane may be covered under the I-405 Braided Ramps Project. As such, this mitigation may not require any investment by the project.

6.1.1 Potential Problem

Heavy volumes (2030 Build) using the northbound left-turn from 120th Avenue NE to Northup Way resulting in moderate-to-high vehicle delays.

6.1.2 Possible Solution

Add 150-foot-long (minimum) northbound left-turn pocket.

6.2 120th Avenue NE at NE 15th/16th Street

NE 15th/16th Street is a proposed new roadway connecting NE 12th Street to 120th Avenue NE and 124th Avenue NE that would draw a significant amount of traffic during peak-hour periods. Under the 2030 Build scenario, volumes projected for the southbound right turn from 120th Avenue NE to NE 15th/16th Street (trips shortcutting to NE 12th Street) are fairly high, as are the expected vehicle delays for the southbound approach. To enhance signal timing efficiency at the intersection of 120th Avenue NE at NE 15th/16th Street, a southbound right turn lane could be considered as an added design element to reduce southbound queuing activity and allow for overlapping of signal phasing with the eastbound left-turn movement.

6.2.1 Potential Problem

Heavy volumes using the southbound left turn from 120th Avenue NE to NE 15th/16th Street due to the new connection to NE 12th Street.

6.2.2 Possible Solution

Add 125-foot-long (minimum) southbound right-turn pocket.

"DRAFT Traffic Operations Analysis Report, 120th Avenue NE, Phase 1 (NE 3rd Street to NE 7th Street)" report, INCA Engineers, Inc. November 2009

"2009 City of Bellevue Pedestrian & Bicycle Transportation Plan Report", City of Bellevue Planning Division, 2009

Highway Capacity Manual, Transportation Research Board, National Research Council, HCM 2000 (<http://www.trb.org/Main/Public/Blurbs/152169.aspx>)

City of Bellevue Arterial Classification System
(http://www.bellevuewa.gov/arterial_class_map.htm)

City of Bellevue Wilburton Connections Projects
(<http://www.bellevuewa.gov/wilburton-connections.htm>)